

Meeting for Business, July 30, 1844.

VICE PRESIDENT MORTON in the Chair.

The Report of the Corresponding Secretary having been read and adopted, and some other business transacted, the Society proceeded to ballot for members—when

Mr. C. M. Blake, of Philadelphia,
was announced duly elected.

Stated Meeting, August 6, 1844.

VICE PRESIDENT MORTON in the Chair.

DONATIONS TO LIBRARY.

The probable influence of Icebergs upon Drift. By John L. Hayes. Read before the Association of American Geologists and Naturalists, May 4, 1843. From the Author.

The American Journal of Science and Arts. No. 1. Vol. 47. July, 1844. From the Editors.

Seventh Annual Report of the Egyptian Society, read 31st March, 1843. From Geo. R. Gliddon, Esq.

A letter was read from Mr. John L. Hayes, dated Portsmouth, N. H., July 26, 1844, acknowledging the receipt of his notice of election as a correspondent.

A communication from the London Botanical Society, dated 7th June, 1844, transmitting the thanks of the Society for No. 1, Vol. 2d, of the Proceedings.

A paper by Dr. Melsheimer, of Dover, Pa., intended for publication, being a continuation of his descriptions of North American Coleoptera, was read and referred to the following committee :

Dr. B. H. Coates, Dr. M'Murtrie, and Mr. Markland.

Dr. Zantzinger called the attention of the Society to the specimen of milky fluid or juice derived from the Cow tree of S. America, which had been presented at the last stated meeting by a lady of this city. As this was a substance of peculiar interest, and the opportunity of obtaining or of seeing it here very rarely occurred, he stated that he had, on these accounts, been induced to collect from various sources some information relating to it, which he would now present to the Society. Most of the facts had been obtained from Curtis' Botanical Magazine, Vol. 13, new series.

The tree affording this milk is a native of Venezuela, and was first discovered by Humboldt in the year 1802, and was believed by him to be peculiar to the Corderilla of the shore, between a plantation called Barbula and the Lake of Maracaybo, a district of country extending from the 65th to the 71st degree W. Longitude, and from the 9th to the 11th degree N. Latitude. It grows in situations elevated probably from 3000 to 4000 feet above the level of the sea, and in a temperature of which the annual mean is from 65° to 70°. It is called by the natives Palo de Vaca, and is highly prized by them.

The true botanical character of this plant is not yet accurately determined. Its flowers having never been seen by botanists, the class and order to which it belongs cannot therefore be ascertained. The fruit is known, and has been figured and described. By some it has been considered as a species of *Brosimum*, by others as belonging to the natural family *Sapotæ*; but it is now generally regarded as a new genus, to which the name *Galactodendron*, originally suggested by Humboldt, has been applied. Its generic characters are given by Kunth, in his 'Synopsis Plant: Æquinoc:' He places it among the *Urticæ*, and has called it *Galactodendron utile*. The fruit is a monosperm, contained in a green covering or rind, and as represented in Curtis' Botanical Magazine, is not unlike in size and shape the fruit of the Hickory or Walnut.

Humboldt's description of this tree is to be found in his 'Relation Historique,' Vol. 2. He states that, while on his route, for some weeks he had heard much of a tree called the Cow tree, whose juice is a nourishing milk, and that the natives regarding it as such, consumed large quantities of it. This was to him an extraordinary fact, as almost all lactescent vegetable fluids are unpalatable, and more or less poisonous.

He found, however, that the statements he had received were not

exaggerated, as he had subsequently ample opportunities of judging from trials made of it himself. He says: "It was a gluey and thickish milk, destitute of acidity and exhaling a very agreeable balsamic odour. It was offered to us in calabashes, and though we drank large quantities of it, both at night before going to bed, and again early in the morning, we experienced no uncomfortable effects." The viscosity of this milk was the chief objection to it. The natives and slaves used it freely, and became visibly fatter during the season when the Palo de Vaca yields most milk.

Other naturalists and travellers have since confirmed these statements of Humboldt. He also says: "none of the wonders of these tropical regions so rivetted my gaze as did this tree, growing on the sides of rocks, its thick roots scarcely penetrating the stony soil, and unmoistened for many months in the year by a drop of dew or rain. But dry and dead as the branches appear, if you pierce the trunk, a sweet and nutritive milk flows forth, which is in greatest profusion at day-break. At this time the blacks and other natives of the vicinity hasten from all quarters, furnished with large vessels to catch the milk, which thickens and turns yellow on the surface. Some drink it on the spot, others carry it home to their children, and you might fancy you saw the family of a cow-herd gathering around him and receiving from him the produce of his kine."*

Sir Robert Ker Porter, British consul at Laguayra, at the request

Sir Wm. Hooker, visited in the month of May, 1837, the region where the Palo de Vaca is found. Accompanied by some of the natives, with great difficulty and fatigue, and through a dense and untravelled forest, and at an elevation which he supposed to be 4000 feet above the level of the sea, he reached a group of these trees, and at once made an incision into one of them, 'from which flowed the milk, white and limpid as that of the cow, sweet to the palate and accompanied by an aromatic smell, but leaving a clamminess upon the lips, and upon the tongue a slight bitter.' He was enabled in a short time to obtain a considerable quantity, although less than was usual, as his visit was made during the decrease of the moon, when this fluid is said not to be so abundant as during its increase.

The trunks of the trees seen by him measured in some instances 20 feet in circumference, and had attained an altitude of at least an

* Curtis' Botan. Mag. Vol. 13, new series.

hundred feet. The trunk frequently rose sixty feet before it branched; the branches spread on each side 25 or 30 feet, and from 30 to 40 feet higher. They were densely clothed with foliage of a rich and velvety green colour. The leaves measured from 10 to 16 inches in length, and 2 to 4 inches in breadth. The wood was white, hard and very close grained, and the bark of the larger branches was of a yellowish colour.*

An analysis of the milk of the Palo de Vaca, was made in the year 1823 by MM. Rivero and Boussingault, and published in the 23d vol. of the *Annales de Chimie*, of which the following is a summary:

This vegetable milk possesses the same physical properties as that of the cow, except in being rather viscid; but in chemical properties it materially differs.

It mixes readily with water in all proportions, is not curdled by acids, and is rendered more liquid by ammonia, which latter character shows the absence of caoutchouc—alcohol slightly coagulates it. When fresh it slightly reddens turnsol. At the temperature of 100° Cent. it boils. When slightly coagulated by the alcohol, the more liquid portion may be passed through a filter. This when evaporated to the consistence of a syrup and treated with rectified alcohol, develops a little sugar, but the greater part is insoluble. The insoluble portion has a bitter taste, and by chemical manipulation may be made to yield a salt of a magnesian character.

Under the action of heat, the milk of the Palo de Vaca presents at first the same phenomena as that of the cow. A pellicle is quickly formed on the surface, which prevents the disengagement of aqueous vapour. Upon the pellicle being raised as fast as formed, and the evaporation continued carefully at a moderate heat, oily drops begin to form; these increase in proportion as the water is driven off, and at length unite into an *oily liquid*, in which floats a *fibrous substance* which shrivels up according as the temperature of the oil increases. By proper measures the oily matter may be converted into a substance of a yellowish white colour, solid, translucent, resisting pressure, insoluble in water, soluble in hot alcohol and in the essential oils, &c., and in fact resembling refined bees-wax, and applicable to the same purposes.

*Curtis' Botan. Mag., Vol. 13, new series.

The *fibrous substance* is of a brown colour, and without taste; upon a hot iron it swells, then becomes shrivelled and carbonised, giving out an odour like that of broiled meat. Other experiments with this fibrous matter showed its close similarity to animal fibre.

The constituents of the milk of the Cow tree, as ascertained by MM. Rivero and Boussingault are therefore, 1st. wax: 2d. fibrine: 3d. a little sugar: 4th. a magnesian salt: and 5th. water.

Another analysis has been made by the celebrated Mr. Thomson, and published in his *Vegetable Chemistry*. He regards the substance called fibrous by Rivero and Boussingault as having many characters similar to those of cork. He also discovered in it a new substance which he called *Galactine*, obtained by evaporating the milk to dryness by a gentle heat, and digesting the residue in hot alcohol. Upon the solution cooling, an abundance of snow white flakes are deposited, which constitutes the Galactine, of which he gives the ultimate analysis.

The specimen on the table is a portion of some brought by the Brig Caraccas, Capt. Dill, which sailed from Porto Cabello on the 2d July last. It was furnished at the request of a gentleman of this city, by a resident of Porto Cabello. The bottle in which it was sent, contained about a pint, and was labelled 'Leche Palo de Vaca;' and the letter accompanying it, gave some particulars respecting the mode in which it was obtained.

The long period which has elapsed since it was taken from the tree, has necessarily occasioned an alteration in some of its sensible properties.

In colour and consistence it can scarcely be distinguished from ordinary milk; but the smell resembles that of sour or stale cheese, and the taste is of course not agreeable. If allowed to remain undisturbed for some time, it separates spontaneously into two portions; an upper and by far the largest portion, which is thick and viscid, and a thinner one below which is transparent, of a greenish yellow colour, and very like the whey of ordinary milk. When exposed to the air, it quickly thickens and becomes of a dark colour.

Dr. Z. stated that he hoped to have an opportunity to exhibit at a future period, specimens of the fruit, leaves, and probably the flowers of this interesting plant; as he had been kindly promised by the gentleman alluded to above, that every effort should be made to obtain them for the Academy.